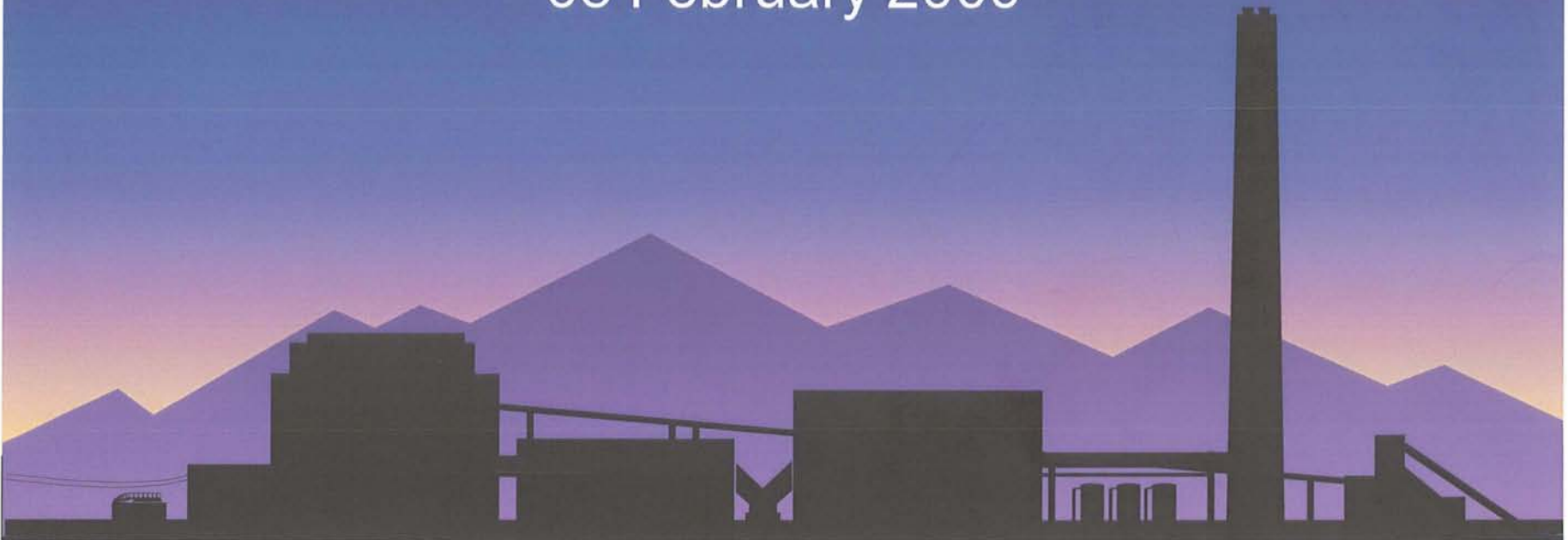# Intermountain Power Service Corporation

Control & Information Systems Development (CISD)
Master Plan Project

08 February 2000

Agenda

CISD Master Plan Project Briefing

- Review Project Purpose & Scope
- Outline Project Objectives & Sequence
- Discuss Project Time Line & Costs

CISD Master Plan Project Abstract

- **Project Purpose**
  - Development of a Master Plan to address the problem of obsolescence in critical plant process control and data systems.
  - Coordination of Approval & Implementation of that plan.

- **Project Team Members**
  - Al Williams
  - Bill Morgan
  - James Burr
  - Ken Nielson

Project Scope

Activities

Project activities will be limited to development of the Intermountain Generation Facility CISD Master Plan.

Systems

The CISD Master Plan will include the following systems:

★ Coordinated Control Systems (CCS)
  ‣ Foxboro Videospec & Microspec Systems
  ‣ GE TAC, TGSI, & EHC Systems
  ‣ Rochester Information System (RIS)
  ‣ Bailey Burner Management & Control Systems.

★ Information Computer Systems (IC)
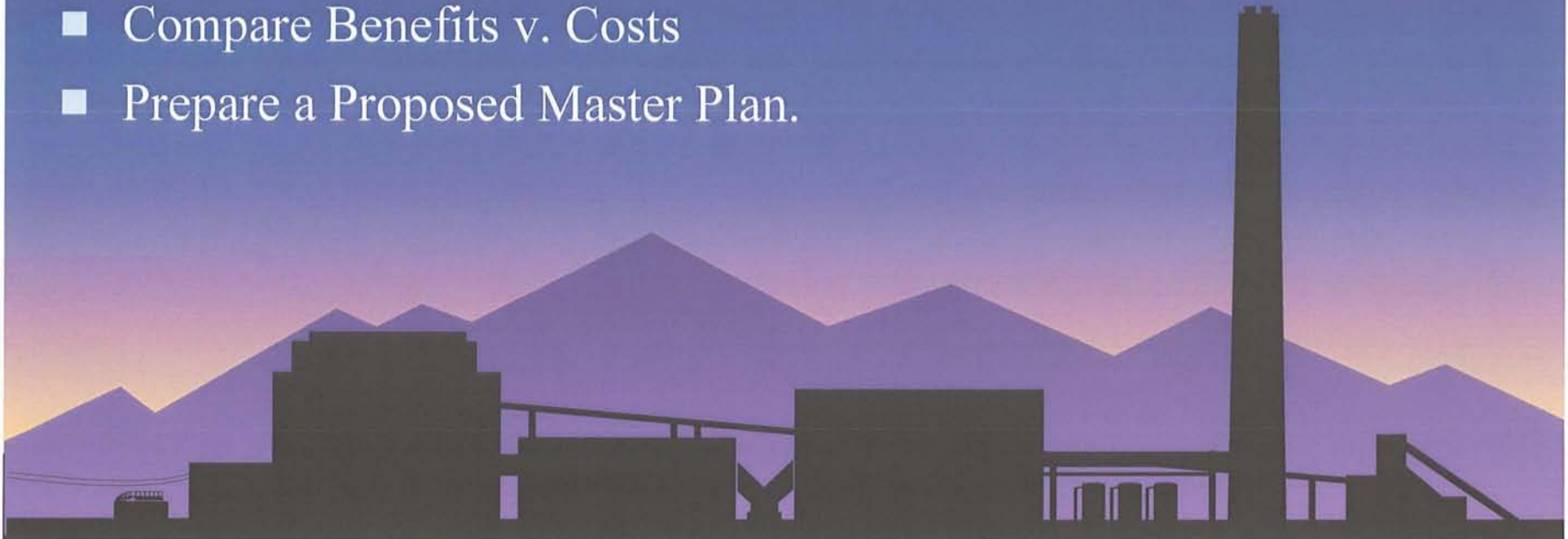 ‣ Foxboro FOX 1/A Systems
  ‣ PI Plant Information Systems

★ Future Simulation, Test, & Training System

Project Objectives

- Review Status of Existing Systems
- Identify Preferred Replacement Technology
- Identify Replacement Priorities & Sequence
- Develop Replacement Schedule & Costs
- Compare Benefits v. Costs
- Prepare a Proposed Master Plan.

Historical Background

The CCS and IC systems were installed in 1986-87. By 1989, OEMs had discontinued production and sale of new systems of this type.

In 1993, the PI system was installed to enhance plant information collection capability and extend the service life of the IC system. Replacement of the IC system was originally planned for 1998-99.

Currently, OEMs and some 3rd-party vendors continue to provide support for most CCS and IC system components but support costs are escalating and parts availability is decreasing.

Project Justification

- Maintain Station Availability
  - Reliable and continuous operation of the CCS and unit-level process information systems is critical to this goal.
  - The obsolete nature of these systems may impact this goal.

- Improve Station Efficiency/Cost Control:
  - Maintenance costs for these systems is increasing.
  - New systems may offer significant capability for further efficiency gains at IGS.

- Develop a Replacement Master Plan:
  - Lead-time to begin a project of this type is 2 - 3 years.
  - Project duration would be 2 - 4 years.
  - Starting today, replacement would begin in 2002 and end between 2004 -2006

  ★ In 2002, IGS will be operating with CCS and IC systems that are 16 years old.

Project Activities

- ■ Maintain Station Availability:
  - ► The current status of each system will be reviewed, including:
    - ★ System reliability & availability.
    - ★ Lead-time for replacement parts and response time on repairs.
    - ★ Need for and alternatives to the existing systems.
  - ► A prioritized replacement sequence will be developed from the review.

- ■ Improve Station Efficiency/Cost Control:
  - ► Maintenance costs for existing systems will be reviewed
  - ► The technology review will seek to identify other potential benefits and gains that replacement technology may offer IPSC beyond reduction of control and information systems maintenance costs and inventory.

- ■ Develop a Replacement Master Plan:
  - ► System descriptions and documentation will be updated.
  - ► A technology review will be completed to identify:
    - ★ Preferred replacement technology; and,
    - ★ OEMs with candidate capability for replacement system.
  - ► Preliminary replacement system designs and a time line will be completed to provide for development of accurate budgetary cost estimates.

Project Benefits

- **Maintain Station Availability:**
  - Issue of obsolescence and spare parts availability would be addressed.

- **Improve Station Efficiency/Cost Control:**
  - New systems utilize less proprietary hardware reducing cost to maintain.
  - Control/monitoring system speed and capability would be improved. Offering potential savings in plant operations and maintenance.
  - Control system programs on new systems would be portable to modeling and simulation systems.

- **Develop a Replacement Master Plan:**
  - Develops an organized replacement sequence and identifies future budget requirements.
  - Provides current, accurate information on system status.
  - Minimizes potential for emergency replacement projects.
  - Provides vehicle for discovery of any unidentified critical issues in the replacement plan/design.
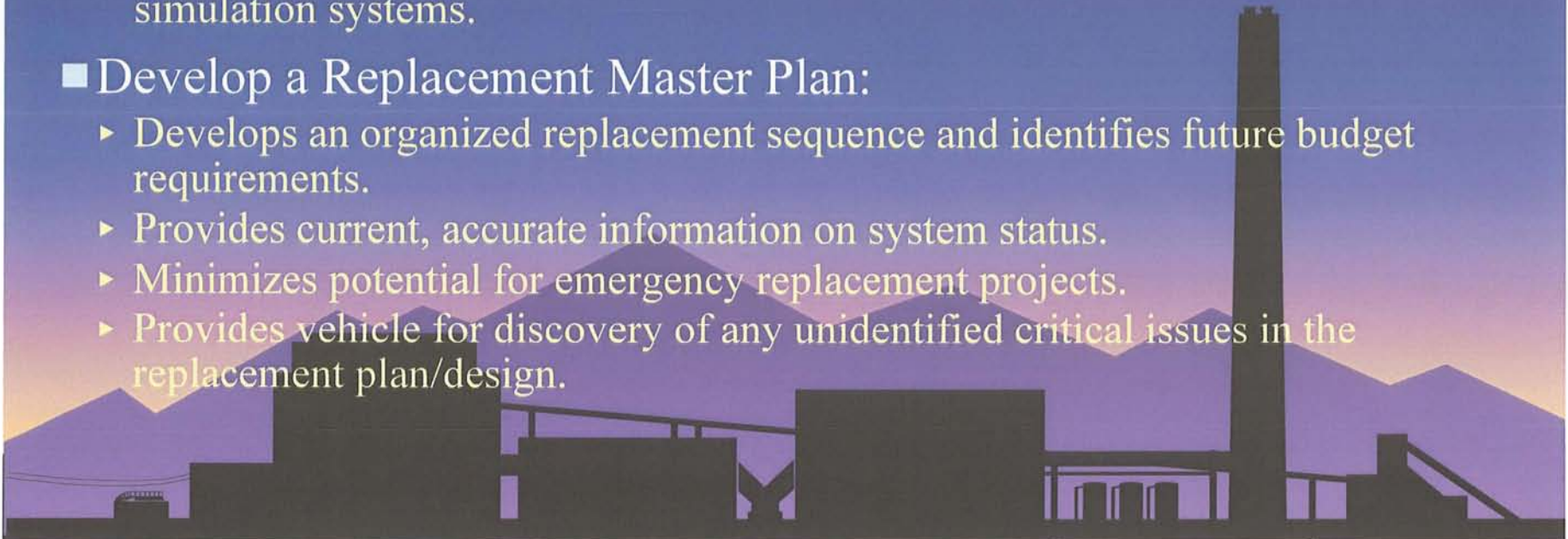
Project Sequence

- Update system descriptions and complete a system review.

- Complete a technology Review.

- Determine replacement priorities.

- Develop preliminary replacement designs.

- Obtain accurate cost estimates for replacement projects.

- Develop a Master Plan.

- Develop a multi-year budget proposal for to implement the plan if approved.

Project Deliverables

- Completion of System status summaries.

- List of technology alternatives, preferred technology options, and candidate vendors.

- Preliminary replacement design/criteria.

- CISD Master Plan, recommended time-line, and budgetary cost estimate.

- Multi-year capital budget proposal will be submitted per the CISD Master Plan schedule.
  - ★ Contingent on Master Plan Approval.

Project Requirements

- Manpower approval
  - ★ Authorization to spend additional time on project objectives.

- Travel Authorization
  - ▸ To get accurate information on actual system capabilities v. advertized:
    - ★ Visit to sites with installed candidate systems.
    - ★ Attend specified events/sites offering comparative information on multiple competing technologies.
    - ★ Attendance to specific events providing information on state of the art technology.

Master Plan Development Costs

Projected Cost Summary Includes:

- Simulation Center
  - Allows review of multiple systems for comparative analysis.
- Navajo
  - Installed Foxboro system.
- Bonanza
  - Foxboro site with scaled implementation schedule.
  - Implemented site of Esscor simulator.
- Other Candidate System Sites.
- Technology Presentations & Updates.

Alternatives to Master Plan

- ## Do nothing -
  - ‣ Defer Replacement as long as possible
  - ‣ No Plan

- ## Immediate Replacement
  - ‣ No Coordinated Plan

Alternatives to Master Plan
Benefits v. Risks

- ## Do Nothing
  - ★ Benefits:
    - Project manpower & Travel Costs Eliminated

  - ★ Risks:
    - Potential for Support and Maintenance Problems
    - Emergency System Replacement
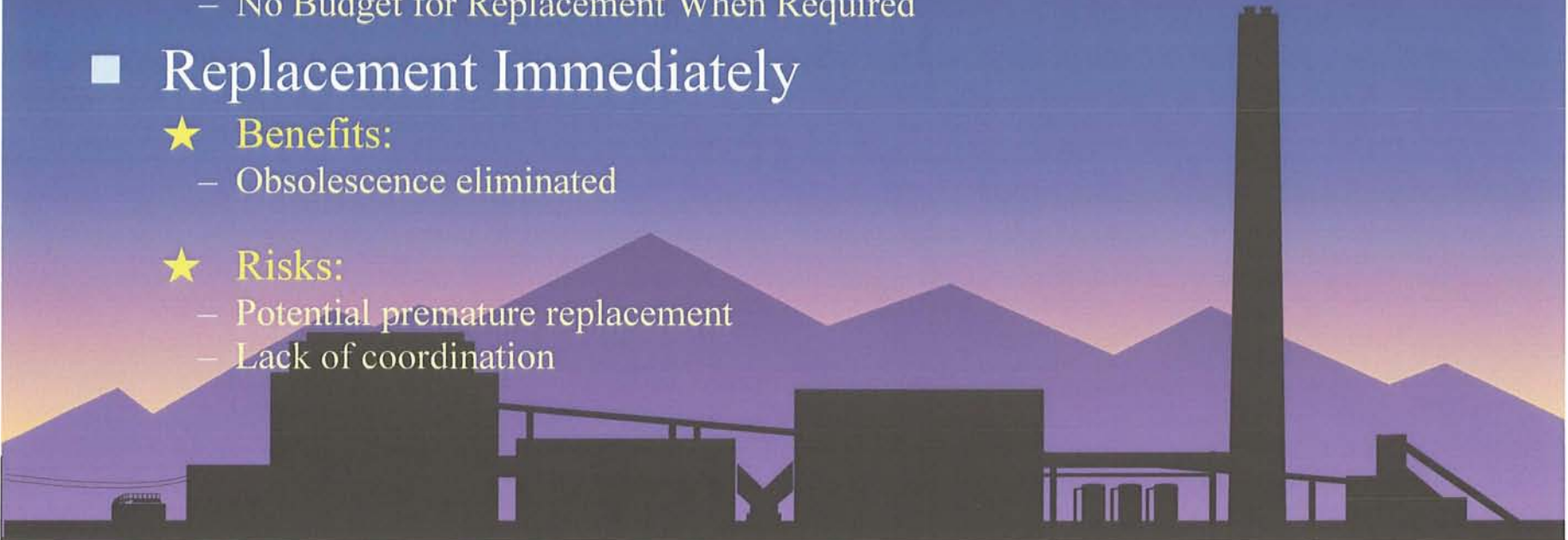   - No Budget for Replacement When Required

- ## Replacement Immediately
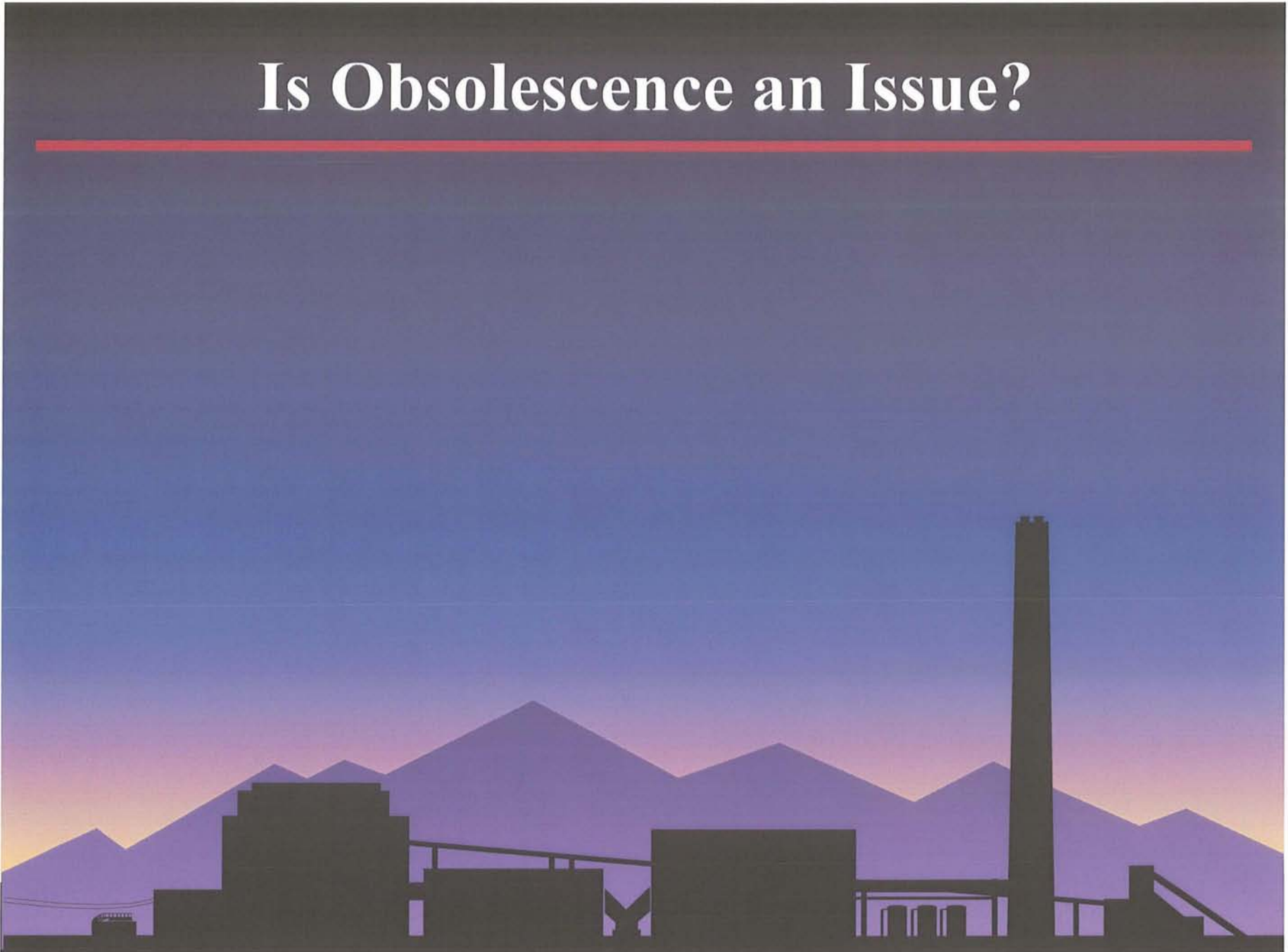 - ★ Benefits:
    - Obsolescence eliminated

  - ★ Risks:
    - Potential premature replacement
    - Lack of coordination

Is Obsolescence an Issue?

Is Obsolescence an Issue?

- Compare Aircraft
  - ▸ P-51 Mustang - WWII fighter aircraft
    - Operational: 1940
    - Speed: 437 mph
    - Max Load: 5000 lbs.
    - Engine: 1695 hp
    - Range: 2080 miles
  - ▸ F-22 Raptor - Latest fighter aircraft
    - Operation: To be deployed in 2004
    - Max Speed: 1500 mph (mach 2)
    - Max Load: 30,000 lbs
    - Engine: 70000 lb thrust (~4600 hp @ mach 2)
    - Range: 1784 miles

If Aircraft were Computers

If aircraft had advanced in 60 years as much as computers have in 10 ... fighter aircraft would have:

- Max. Speed: +36,000 mph
- Payload: 417,000 lbs
- Engine: 54,240 hp
- Range: 173,300 miles

Got any P-51 parts?

Summary

- **Project description**
  - The project purpose is review and address the problem of obsolescence in critical plant process control and data systems.

- **Project goals**
  - Review Status of Existing Systems
  - Identify Preferred Replacement Technology
  - Prepare Preliminary Replacement Design
  - Develop Replacement Schedule & Costs
  - Compare Benefits v. Costs
  - Prepare a Master Plan

- **Project benefits**
  - Maintain Station Availability.
  - Improve Station Efficiency/Cost Control.
  - Develop a Replacement Master Plan.
  - Minimizes potential for emergency replacement projects.

- **Project schedule**
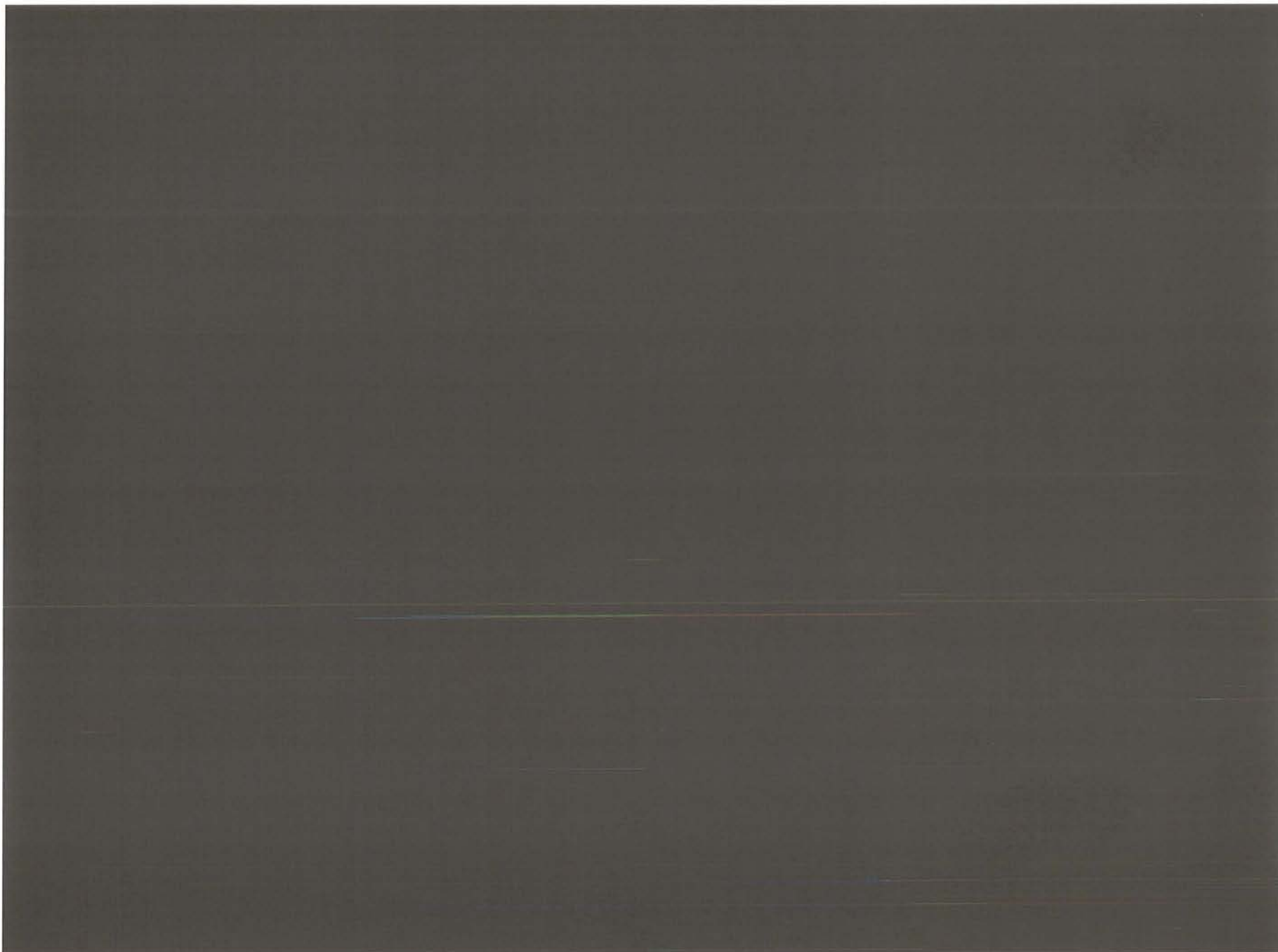
Questions and Answers

- Questions and Answers
  - Is replacement of CCS and Information Systems being proposed?
    - ★ No, this project is to review what needs to be done, when, what order, and lay out a plan to accomplish those items.
  - Is this part of the IPSC Strategic Plan?
    - ★ Yes, the Computer Services Strategic Plan included periodic review of process computer systems.
  - Is this project necessary now?
    - ★ Yes, IPSC is already experiencing some problems with maintenance due to obsolescence.

- Your Questions